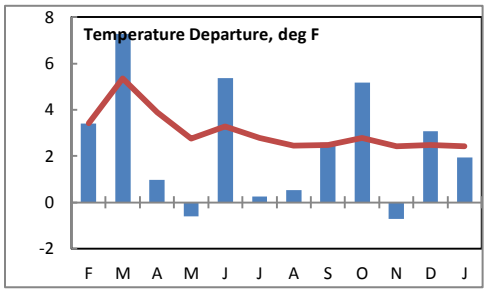
Montana Weather/Precipitation Summary

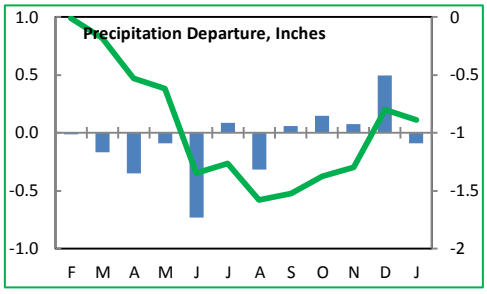
January 2016 NOAA's National Weather Service Great Falls Montana

A high pressure ridge was centered over the Rocky Mountains in January. This brought west to northwest flow to the state for the month. The ridge was a bit stronger than normal for January (Fig. 1). Temperatures were slightly below normal in the southwest valleys and a small portion of north central Montana, and generally above normal elsewhere. The first half of the month had mostly below average temperatures, and the second half had above normal values. Precipitation was mostly above normal, with areas of below normal in the north central and southeast. January's winds were below the long-term average.

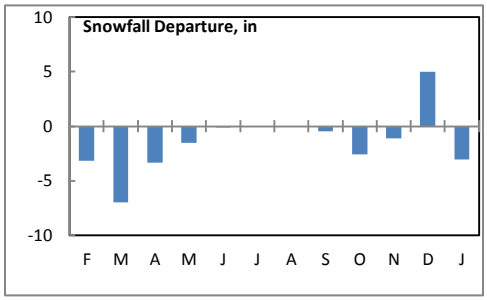
Statewide composite temperatures averaged 1.9°F above normal for the month. The red line on the graph to the right shows the cumulative 12-month departure from normal. The temperature anomalies ranged from -2.2°F at Townsend to +5.3°F at Mizpah (Custer) (Fig. 2). The warmest average monthly temperature was 34.0°F at Nye (Stillwater), and the coolest was 12.9°F at Westby (Sheridan). This was the 36th warmest January of record. For the past 12-months, the statewide composite average temperature is 2.4°F above normal. Ten of the last 12 months and 16 of the past 24 months have had warmer than normal temperatures.



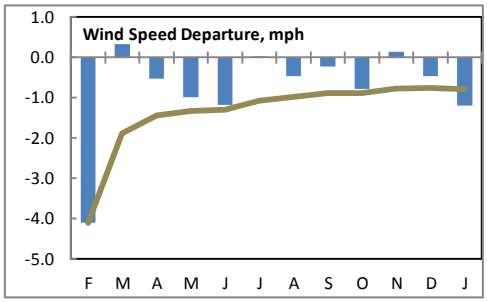
The monthly departure from normal for precipitation across Montana is shown in Figure 3. Precipitation amounts were quite variable. Below normal precipitation was most common, however, there were areas of above normal in the north central and southeast. The highest amount recorded was 12.30-inches at Noisy Basin SNOTEL (Flathead). Statewide, this month averaged 0.69", or 0.09" below normal. This was the first month since August to record below normal precipitation, as a statewide average. The statewide composite precipitation for the past 12 months is 0.89" below normal. The green line on the graph to the right shows the cumulative 12-month departure from normal.



With little snowfall in September and October and below normal snow in January, snowfall totals remain on the lighter side. The monthly composite was 7.0", or 3.0-inches below normal (figure on right). This was the 25th lightest January snowfall of record, and the lightest since 2001.



The statewide average winds were lighter than normal this month, ranking as the 9th calmest January of record. The statewide composite average was 8.0 mph, 1.2 mph below normal. The brown line of the graph to the right shows the 12-month cumulative statewide wind departure from normal. This was the calmest January average since 2010. The 12-month average is running 0.8-mph below average. The fastest average speed was 18.7 mph at Livingston, with a higher elevation location, Deep Creek RAWS, recording 22.0 mph. The fastest measured gust of the month, 85-mph, occurred at Deep Creek RAWS on the 26th. Two Medicine recorded a gust to 79 mph on the 26th.



Refer to NEIC's State of the Climate report for the latest monthly discussion: http://www.ncdc.noaa.gov/sotc/.

January 1-17
Other than brief ventures above normal, below normal temperatures dominated during this period. The largest snowstorm of the month was from the 15th-17th. Up to a foot of snow fell in the Wilsall area, with amounts near 10 inches at Greenough and 6 inches in the Roundup areas. Most areas received snow, but in lesser amounts. The coldest temperature of the month occurred in northern Valley County on the 17th, when Bluff Creek fell to -32°F. Although cold, this was the warmest lowest temperature in January in Montana since 2006.

January 18-31
The last half of January was on the mild side. Along with the warmer temperatures comes a windier period as well. Gusts reached 79 mph at Two Medicine on the 21st. On the 26th, Deep Creek RAWS recorded the highest gust of the month (85 mph), while Two Medicine peaked at 79 mph again. Gusts reached 72 mph at Livingston on the 28th. Although a windy period, winds averaged lighter than normal for the month. Warm air on the 28th pushed high temperatures into the lower 60s over portions of central Montana.
The cold period in early January was a continuation of a cold period from December. Heavy snow from December remained on the ground due to the extended cold period. Great Falls finally melted their snow on January 22. This ended a 40 day streak of an inch or more on the ground, their longest stretch since 1985. A streak of 49 days at Helena, which had not yet broken by month's end, was their longest since the 2009-10 season.

Precipitation/convection

Severe convective weather occurred on zero days in January, which is normal.

Water Year
The temperature was 31.2°F or 2.4°F above normal. This was the warmest water year since 2012 and the 34th warmest of record.
The composite precipitation was 4.17 inches, 0.66" inches above normal. This is the 32nd wettest water year to date, and the wettest since 2013.
Composite snowfall was 30.1" or 1.6" below normal. This is the lightest water year to date snowfall since 2012, and the 66th lightest of record.
Winds averaged 8.4 mph, the 8th calmest of record, and the lightest composite statewide winds since 2011.

January summary information:

High Temperature	63°F at Dry Blood Ck (Petroleum) (28th)	**Greatest Precip**	7.07" at Noxon
Low Temperature	-32°F Bluff Creek (Valley) (17th)		14.40" Poorman Creek SNOTEL
Warmest Ave Temp	34.0°F at Nye (Stillwater)	**Peak Wind Gust**	86 mph at Deep Creek RAWS (8th)
Coolest Ave Temp	12.9°F at Westby (Sheridan)		79 mph at Two Medicine (8th)
Range of Temp departures	-2.2°F at Townsend to +5.3° at Mizpah (Custer)	**Highest Ave Wind**	20.0 mph at Livingston 21.8 mph at Deep Creek RAWS
21 city mean monthly Temperature/Normal	22.4/20.5F 1.9F above normal. 36th warmest of record (since 1880). 73rd percentile. Oct-Jan 31.2/28.8 2.4F above normal. 34th warmest of record.	**20 city mean monthly wind speed/Normal**	8.0 mph/9.2 mph; 9th calmest of record (since 1936). 12th percentile. Oct-Jan 8.4 mph/9.0 0.6-mph below normal. 8th calmest of record.
22 city mean monthly precipitation/Normal	0.69/0.78" – 88% of normal. 47th driest of record (since 1880). 34th percentile. Oct-Jan 4.17"/6.51" – 0.66" above normal. 32nd wettest of record.		

Historical Rank of Precipitation (inches)
for the Current Month and Water Year to Date

Location	Jan	% of Norm	Rank	Pcntl	Oct 1 – Jan 31	% of norm	Rank	Pcntl	Years
Baker	0.30	160%			1.38	64%			18
Billings	0.44	54%	59	50	3.29	94%	73	63	114
Belgrade	0.36	71%	33	41	3.21	111%	50	63	79
Butte	0.34	72%	46	37	3.08	131%	86	70	122
Cut Bank	0.44	220%	80	72	2.36	197%	92	84	109
Dillon	0.05	19%	17	21	2.13	133%	62	81	76
Glasgow	0.34	92%	57	47	3.32	173%	108	91	118
Great Falls	0.62	122%	68	54	5.72	228%	123	99	124
Havre	0.36	109%	58	42	2.29	132%	79	58	136
Helena	0.31	86%	40	28	2.01	104%	45	32	138
Jordan	0.44	191%			4.13	229%			18
Kalispell	1.48	111%	74	60	5.53	104%	73	60	122
Lewistown	0.67	118%	64	53	2.86	93%	43	35	120
Livingston	0.15	31%	24	20	4.24	148%	96	85	113
Miles City	0.34	106%	60	43	1.60	83%	44	31	139
Missoula	0.63	74%	41	29	3.99	104%	70	51	136
Mullan Pass	5.16	92%	37	49	23.32	130%	57	76	75
Wolf Point	0.10	32%			1.77	98%			18
Glendive	0.20	56%	33	27	1.29	57%	26	22	117
Sidney	0.17	41%	19	24	1.47	57%	21	27	76
BZN-MSU	0.67	81%	50	36	5.45	117%	114	83	137

Rankings and Percentiles are 1=driest, higher numbers=wetter.
For an automated version of this chart, updated daily, go to
http://www.wrh.noaa.gov/tfx/dx.php?wfo=tfx&type=&loc=products&fx=PCPNTOTALS

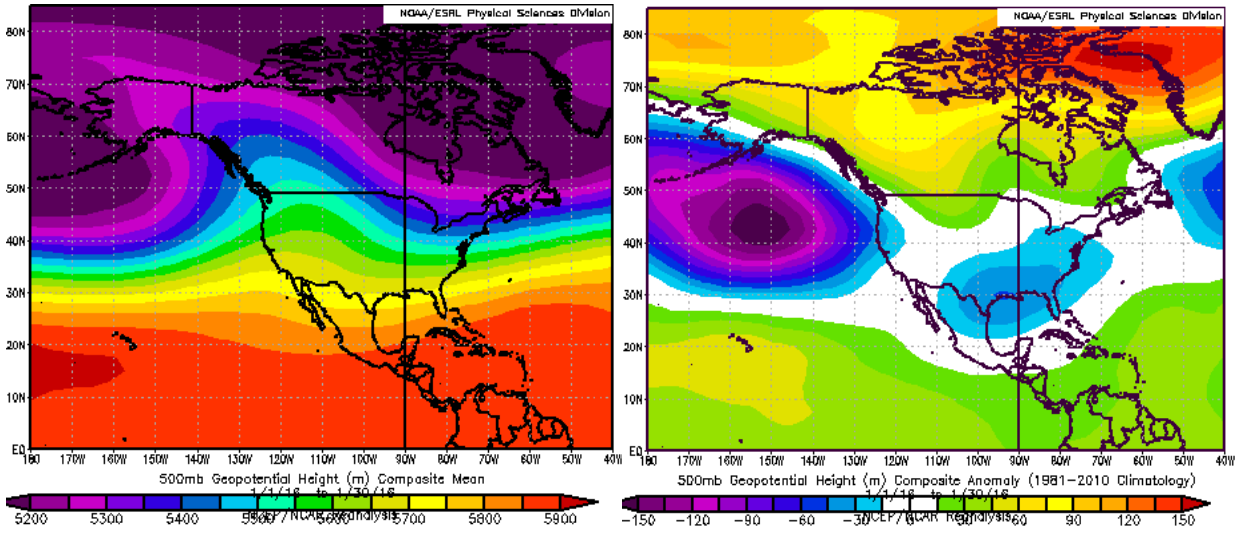


Figure 1. Mean flow at 500 millibars (~18,000 ft) for this month (left) and departure from normal (right).

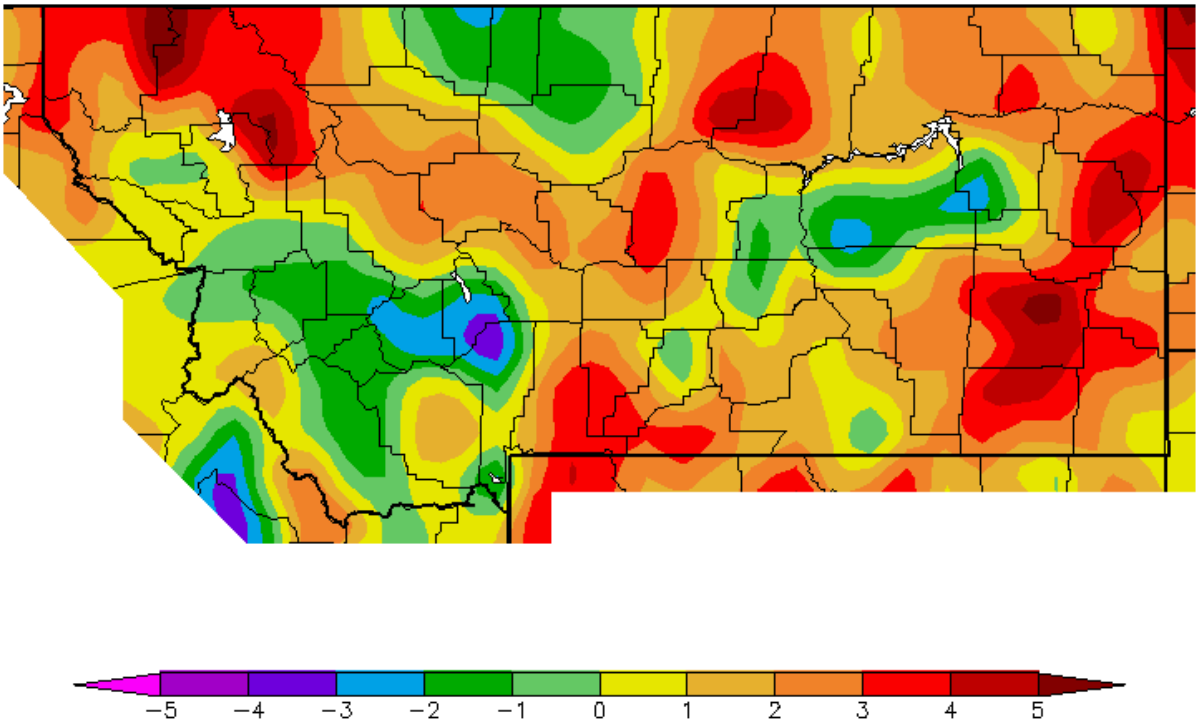


Figure 2. January 2016 temperature departures from normal (°F) (Western Region Climate Center).

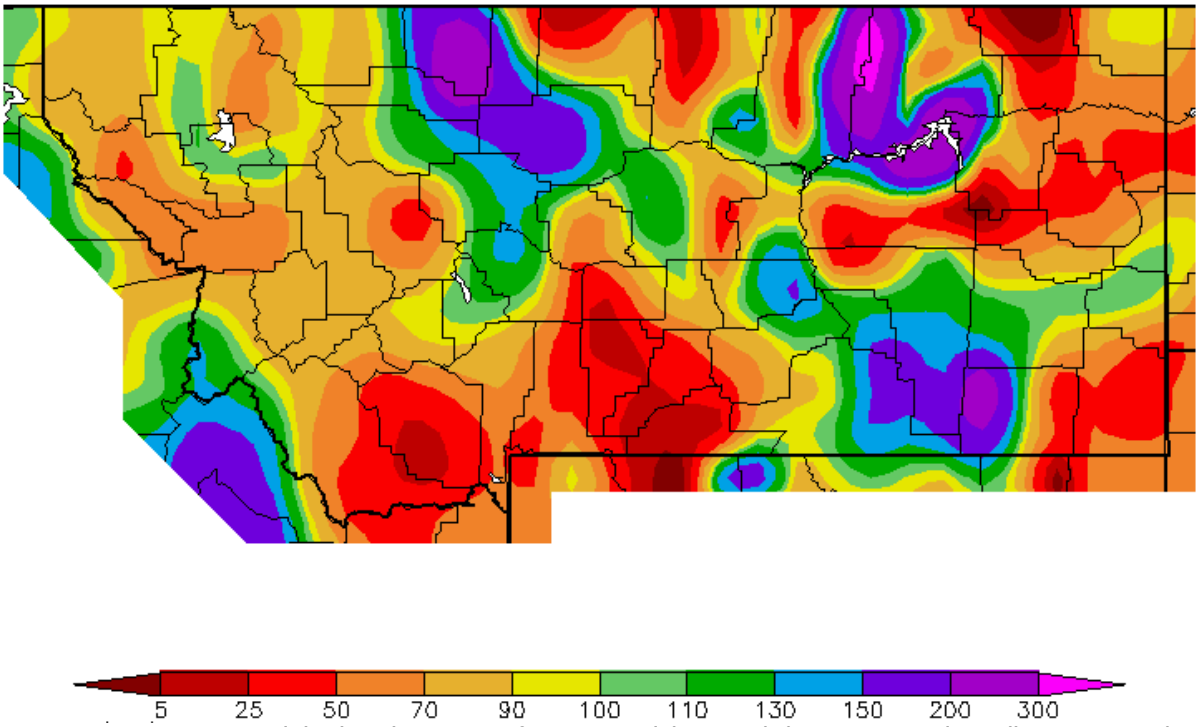


Figure 3. January 2016 precipitation departures from normal (percent) (Western Region Climate Center).

For a state map of % of normal water year precipitation (updated around the 7th of each month), go to: http://www.wrh.noaa.gov/tfx/climate/monthlysum/climatesum.php?wfo=tfx

For the latest information on mountain snowpack from the NRCS, go to: http://www3.wcc.nrcs.usda.gov/snow/index.html

For the latest U.S. Drought Monitor, issued weekly by the National Drought Mitigation Center, USDA and NOAA, go to: http://droughtmonitor.unl.edu/

These data are preliminary and have not undergone final QC by NEIC. Therefore, these data are subject to revision. Final and certified climate data can be access at the National Environmental Information Center (NEIC) http://www.ncdc.noaa.gov. Many more links are on the Drought Information Page of the NWS Great Falls web site at http://www.wrh.noaa.gov/tfx/main/drought.php?wfo=tfx. The climatological record for normals is 1981-2010. The ranking period for temperature, precipitation and snowfall is since 1880. The ranking period for wind speeds is since 1936. The ranking period for soil moisture is since 1995.